

2012 - Mazda6 - Transmission/ Transaxle

DTC P0731:00 [FS5A-EL]

DTC P0731:00	Gear 1 incorrect ratio
DETECTION CONDITION	• The TCM detects that revolution ratio of the input revolution to output revolution is 2.185 or less for 1 s four times when the following conditions are met. ▪ 1GR ▪ Accelerator pedal position: 4.67% or more Diagnostic support note • The MIL does not illuminate. • The AT warning light illuminates. • PENDING CODE is not available. • FREEZE FRAME DATA is not available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	• Deteriorated ATF • ATF level low • Solenoid valve malfunction ▪ Pressure control solenoid A ▪ Shift solenoid A • Line pressure malfunction • Stall speed malfunction • Forward clutch slipping • One-way clutch No.1 slipping • Primary control valve body malfunction • TCM malfunction

Diagnostic procedure

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STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY - Verify related Service Bulletins and/or on-line repair information availability. - Is any related repair information available?	Yes	Perform repair or diagnosis according to the available repair information. If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT ATF CONDITION - Inspect the ATF condition. (See AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL] .) - Is it normal?	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 9. (See AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL] .)
3	INSPECT ATF LEVEL - Inspect the ATF level. (See AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL] .) - Is it normal?	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 9. (See AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL] .)
4	INSPECT SOLENOID VALVE - Inspect the following solenoid valves: (See SOLENOID VALVE INSPECTION [FS5A-EL] .) - Pressure control solenoid A - Shift solenoid A - Is there any malfunction?	Yes	Replace the solenoid valve, then go to Step 9. (See SOLENOID VALVE REMOVAL/ INSTALLATION [FS5A-EL] .)
		No	Go to the next step.
5	INSPECT LINE PRESSURE - Perform the "Line Pressures Test". (See MECHANICAL SYSTEM TEST [FS5A-EL] .) - Is there any malfunction?	Yes	Repair or replace malfunctioning part according to test result, then go to Step 9.
		No	Go to the next step.
6	INSPECT STALL SPEED - Perform the "Stall Test". (See MECHANICAL SYSTEM TEST [FS5A-EL] .) - Is there any malfunction?	Yes	Repair or replace malfunctioning part according to test result, then go to Step 9.
		No	Go to the next step.
7	INSPECT TURBINE SPEED WHILE DRIVING VEHICLE	Yes	Go to Step 9.

	• Connect the M-MDS. • Start the engine. • Measure the PID "TSS" while driving vehicle under the following conditions: ▪ Selector lever position: D position ▪ Gear position: 1GR ▪ Vehicle speed: 20 km/h {12 mph} • Is the PID "TSS" approx.2,250 RPM?		No	Go to the next step.
8	INSPECT PRIMARY CONTROL VALVE BODY • Remove the primary control valve body. (See CONTROL VALVE BODY REMOVAL/ INSTALLATION [FS5A-EL] .) • Disassemble the primary control valve body. • Inspect the following parts: ▪ Shift valve ▪ Return spring ▪ Hydraulic passage • Is there any malfunction?		Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
			No	Replace the transaxle, then go to the next step. (See AUTOMATIC TRANSAXLE REMOVAL/ INSTALLATION [FS5A-EL] .)
9	VERIFY TROUBLESHOOTING OF DTC P0731:00 COMPLETED • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: ◦ Drive the vehicle under the following conditions for 1 s or more. ▪ 1GR ▪ Accelerator pedal position: 4.67 % or more ◦ Stop the vehicle. ◦ Repeat Step 1—2 three		Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/ INSTALLATION [FS5A-EL] .)
			No	Go to the next step.

	times.		
	Is the same DTC present?		
10	VERIFY NO DTCs ARE PRESENT - Perform the "Reading DTCs Procedure". (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) - Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL] .)
		No	DTC troubleshooting completed.

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Diagnostic procedure

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STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY - Verify related Service Bulletins and/or on-line repair information availability. - Is any related repair information available?	Yes	Perform repair or diagnosis according to the available repair information. If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT ATF CONDITION - Inspect the ATF condition. (See AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) - Is it normal?	Yes	Go to the next step.
		No	Replace the ATF, then go to Step 9. (See AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL] .)
3	INSPECT ATF LEVEL - Inspect the ATF level. (See AUTOMATIC TRANSAXLE FLUID (ATF) INSPECTION [FS5A-EL].) - Is it normal?	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 9. (See AUTOMATIC TRANSAXLE FLUID (ATF) REPLACEMENT [FS5A-EL] .)
4	INSPECT SOLENOID VALVE - Inspect the following solenoid valves: (See SOLENOID VALVE INSPECTION [FS5A-EL].) - Pressure control solenoid A - Shift solenoid A - Is there any malfunction?	Yes	Replace the solenoid valve, then go to Step 9. (See SOLENOID VALVE REMOVAL/ INSTALLATION [FS5A-EL] .)
		No	Go to the next step.
5	INSPECT LINE PRESSURE - Perform the "Line Pressures Test". (See MECHANICAL SYSTEM TEST [FS5A-EL].) - Is there any malfunction?	Yes	Repair or replace malfunctioning part according to test result, then go to Step 9.
		No	Go to the next step.
6	INSPECT STALL SPEED - Perform the "Stall Test". (See MECHANICAL SYSTEM TEST [FS5A-EL].) - Is there any malfunction?	Yes	Repair or replace malfunctioning part according to test result, then go to Step 9.
		No	Go to the next step.
7	INSPECT TURBINE SPEED WHILE DRIVING VEHICLE	Yes	Go to Step 9.

	• Connect the M-MDS. • Start the engine. • Measure the PID "TSS" while driving vehicle under the following conditions: ▪ Selector lever position: D position ▪ Gear position: 1GR ▪ Vehicle speed: 20 km/h {12 mph} • Is the PID "TSS" approx.2,250 RPM?		No	Go to the next step.
8	INSPECT PRIMARY CONTROL VALVE BODY • Remove the primary control valve body. (See CONTROL VALVE BODY REMOVAL/ INSTALLATION [FS5A-EL] .) • Disassemble the primary control valve body. • Inspect the following parts: ▪ Shift valve ▪ Return spring ▪ Hydraulic passage • Is there any malfunction?		Yes	Repair or replace malfunctioning part according to inspection result, then go to next step.
			No	Replace the transaxle, then go to the next step. (See AUTOMATIC TRANSAXLE REMOVAL/ INSTALLATION [FS5A-EL] .)
9	VERIFY TROUBLESHOOTING OF DTC P0731:00 COMPLETED • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: ◦ Drive the vehicle under the following conditions for 1 s or more. ▪ 1GR ▪ Accelerator pedal position: 4.67 % or more ◦ Stop the vehicle. ◦ Repeat Step 1—2 three		Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/ INSTALLATION [FS5A-EL] .)
			No	Go to the next step.

	times.		
	Is the same DTC present?		
10	VERIFY NO DTCs ARE PRESENT - Perform the "Reading DTCs Procedure". (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL].) - Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [FS5A-EL] .)
		No	DTC troubleshooting completed.

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